BELIMO

Technical data sheet EVC24A-MF-RE

Parameterisable globe valve actuator for 2-way and 3-way globe valves

- **Actuating force 2500 N**
- **Nominal voltage AC/DC 24 V**
- **Control modulating DC (0)2...10 V Variable**
- **Nominal stroke 50 mm**
- **Actuating time motor 35 s / 40 mm (44 s / 50 mm)**

RETROFIT

Technical data

Electrical data	Nominal voltage	AC/DC 24 V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 19.2...28.8 V / DC 21.6...28.8 V
	Power consumption in operation	11 W
	Power consumption in rest position	1.5 W
	Power consumption for wire sizing	18 VA
	Connection supply / control	Cable 1 m, 4 x 0.75 mm²
	Parallel operation	Yes (note the performance data)
Functional data	Actuating force motor	2500 N
	Positioning signal Y	DC 0...10 V
	Positioning signal Y note	Input impedance 100 kΩ
	Control signal Y variable	Open-close 3-point (AC only) Modulating (DC 0...32 V)
	Operating range Y	DC 2...10 V
	Operating range Y variable	Start point DC 0.5...30 V End point DC 2.5...32 V
	Position feedback U	DC 2...10 V
	Position feedback U note	Max. 0.5 mA
	Position feedback U variable	Start point DC 0.5...8 V End point DC 2.5...10 V
	Position accuracy	5% absolute
	Manual override	With push-button, can be locked
	Nominal stroke	50 mm
	Actuating time motor	35 s / 40 mm (44 s / 50 mm)
	Actuating time variable	44...113 s / 50 mm
	Adaption setting range	manual (automatic on first power-up)
	Adaption setting range variable	No action Adaption when switched on Adaption after pushing the gear disengagement button
	Override control	MAX (maximum position) = 100% MIN (minimum position) = 0% ZS (intermediate position, AC only) = 50%
	Override control variable	MAX = (MIN + 33%)...100% MIN = 0%...(MAX – 33%) ZS = MIN...MAX
	Sound power level motor	65 dB(A)
	Position indication	Mechanically, 5...50 mm stroke
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Protection class UL	UL Class 2 Supply
	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 2, UL Enclosure Type 2
	EMC	CE according to 2014/30/EU
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14
	Certification UL	cULus according to UL 60730-1A, UL 60730-2-14 and CAN/CSA E60730-1:02
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8 kV

EVC24A-MF-RE

Globe valve actuator, parameterisable, modulating, AC/ DC 24 V, 2500 N, Actuating time motor 35 s / 40 mm (44 s / 50 mm)

Technical data

Safety	Control pollution degree	3
	Ambient temperature range	0...50°C
	Non-operating temperature	-40...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight	7.5 kg

Safety notes

- This device has been designed for use in stationary heating, ventilation and air conditioning systems and must not be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- The switch for changing the direction of motion and so the closing point may be adjusted only by authorised specialists. The direction of motion is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Mode of operation
The actuator is connected with a standard modulating signal of DC 0...10V and drives to the position defined by the positioning signal. The measuring voltage U serves for the electrical display of the actuator position 0...100% and as slave control signal for other actuators.

Parameterisable actuators
The factory settings cover the most common applications. Single parameters can be modified with the Belimo Service Tools MFT-P or ZTH EU.

Installation on third-party valves
The retrofit actuators for installation on a wide range of valves from various manufacturers are comprised of an actuator, universal valve neck adapter and universal valve stem adapter. Adapt the valve neck and valve stem to begin with, then attach the retrofit actuator to the valve neck adapter, connect to the valve and start up. The valve neck adapter/actuator can be rotated through 360° on the valve neck, provided it is permitted by the size of the installed valve.

Installation on Belimo valves
Use standard actuators from Belimo for mounting on Belimo globe valves. The installation of retrofit actuators on Belimo globe valves is technically possible.

Manual override
Manual override with push-button possible (the gear is disengaged for as long as the button is pressed or remains locked).
The stroke can be adjusted by using a hexagon socket screw key (5 mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

High functional reliability
The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.

Position indication
The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position
Factory setting: Actuator spindle is retracted.
The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out an adaption, which is when the operating range and position feedback adjust themselves to the mechanical setting range.
The actuator then moves into the position defined by the positioning signal.

Direction of stroke switch
When actuated, the direction of stroke switch changes the running direction in normal operation.

Product features

Adaption and synchronisation

An adaption can be triggered manually by pressing the “Adaption” button or with the PC-Tool. Both mechanical end stops are detected during the adaption (entire setting range).
Automatic synchronisation after pressing the gearbox disengagement button is configured. The synchronisation is in the home position (0%).
The actuator then moves into the position defined by the positioning signal.
A range of settings can be adapted using the PC-Tool (see MFT-P documentation)

Accessories

Electrical accessories

Description	Type
Connecting cable 5 m, A+B: RJ12 6/6, To ZTH/ZIP-USB-MP	ZK1-GEN
Connection cable 5 m, A: RJ11 6/4, B: Free wire end, To ZTH/ZIP-USB-MP	ZK2-GEN
Auxiliary switch, 2 x SPDT, add-on, grey	S2A-H

Service Tools

Description	Type
Service Tool, for MF/MP/Modbus/LonWorks actuators and VAV-Controller	ZTH EU
Belimo PC-Tool, software for adjustments and diagnostics	MFT-P
Adapter to Service Tool ZTH	MFT-C

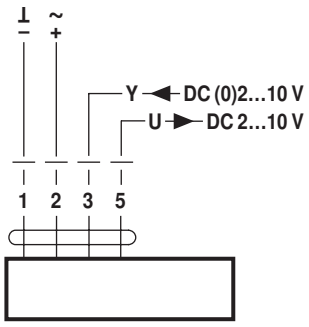
Electrical installation

Notes

- Connection via safety isolating transformer.
- Parallel connection of other actuators possible. Observe the performance data.
- Direction of stroke switch factory setting: Actuator spindle retracted.

Wiring diagrams

AC/DC 24 V, modulating

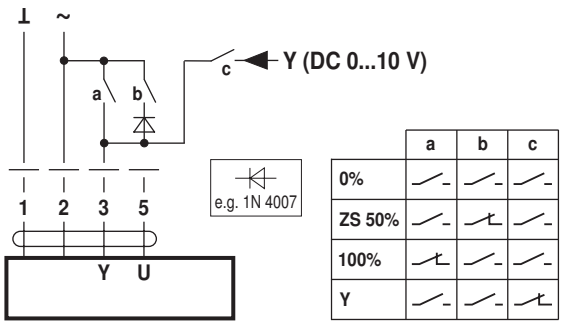


Cable colours:
1 = black
2 = red
3 = white
5 = orange

Functions

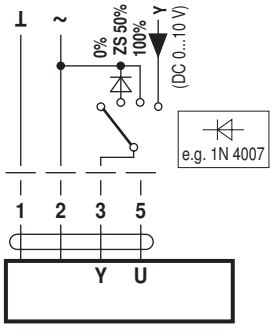
Functions with basic values (conventional mode)

Override control with AC 24 V with relay contacts



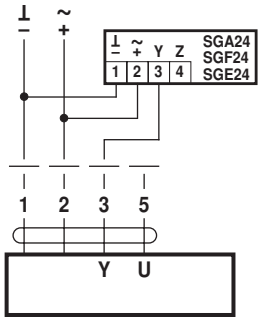
	a	b	c
0%			
ZS 50%			
100%			
Y			

Override control with AC 24 V with rotary switch

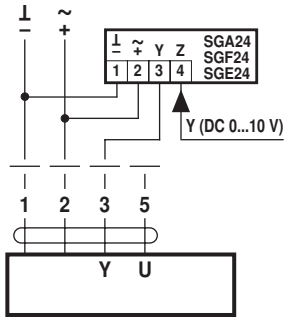


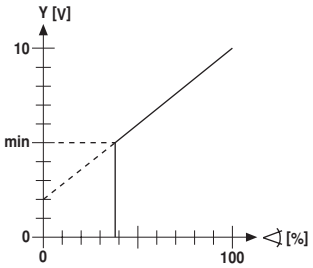
Functions

Remote control 0...100% with positioner SG..

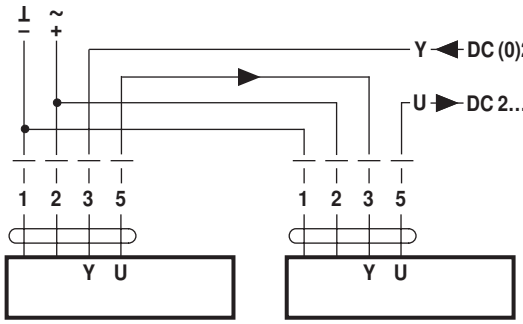


Minimum limit with positioner SG..

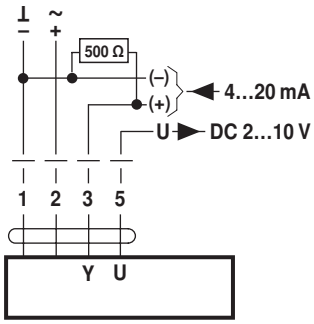




Follow-up control (position-dependent)

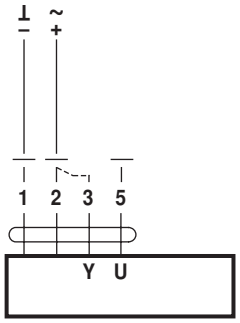


Control with 4...20 mA via external resistor



Caution:
The operating range must be set to DC 2...10 V.
The 500 Ω resistor converts the 4...20 mA current signal to a voltage signal DC 2...10 V

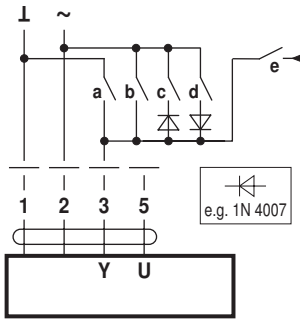
Functional check



Procedure
1. Apply 24 V to connection 1 and 2
2. Disconnect connection 3:
- with upwards direction of motion: closing point at top
- with downwards direction of motion: closing point at bottom
3. Short circuit connections 2 and 3:
- Actuator runs in the opposite direction

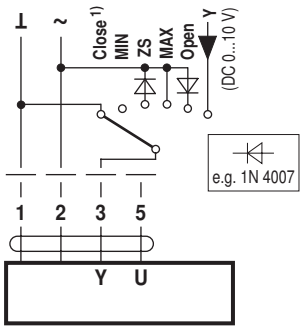
Functions for actuators with specific parameters (Parametrisation with PC-Tool necessary)

Override control and limiting with AC 24 V with relay contacts



	a	b	c	d	e
Close [1]	⊥	⊥	⊥	⊥	⊥
MIN	⊥	⊥	⊥	⊥	⊥
ZS	⊥	⊥	⊥	⊥	⊥
MAX	⊥	⊥	⊥	⊥	⊥
Open	⊥	⊥	⊥	⊥	⊥
Y	⊥	⊥	⊥	⊥	⊥

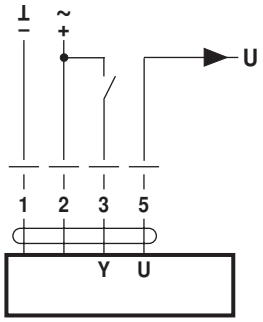
Override control and limiting with AC 24 V with rotary switch



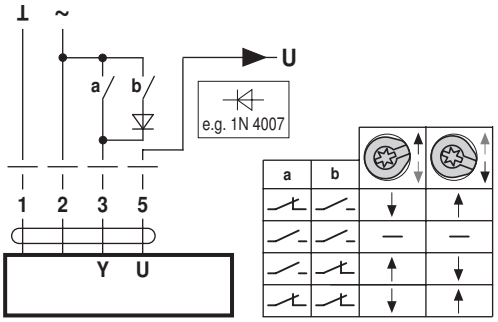
1) **Caution:** This function is only guaranteed if the start point of the operating range is defined as min. 0.5 V.

Functions

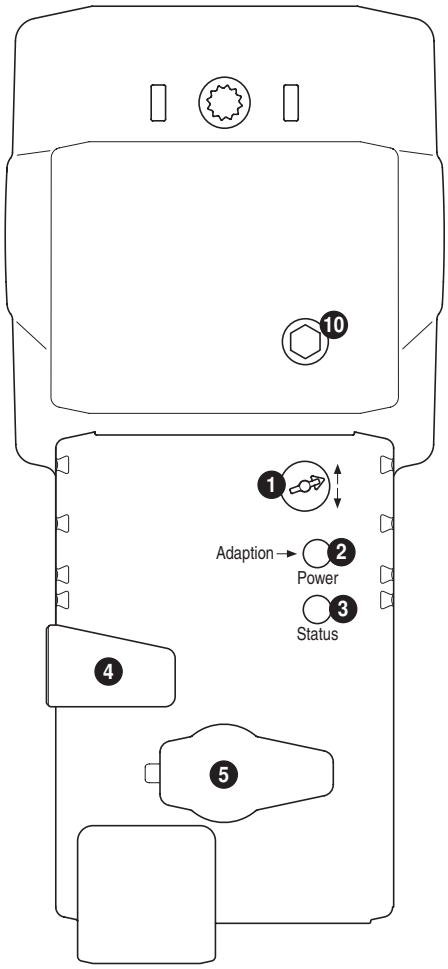
Control open-close



Control 3-point



Operating controls and indicators



1 Direction of stroke switch

Switch over: Direction of stroke changes

2 Push-button and LED display green

Off: No power supply or malfunction
On: In operation
Press button: Triggers stroke adaptation, followed by standard mode

3 Push-button and LED display yellow

Off: Standard mode
On: Adaptation process active
Press button: No function

4 Gear disengagement button

Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, synchronisation starts, followed by standard mode

5 Service plug

For connecting parameterisation and service tools

10 Manual override

Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

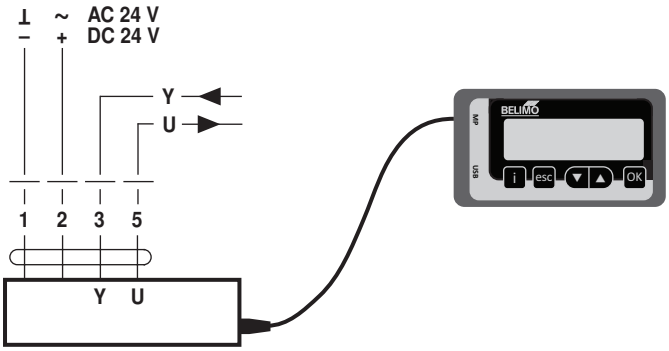
Service

Notes

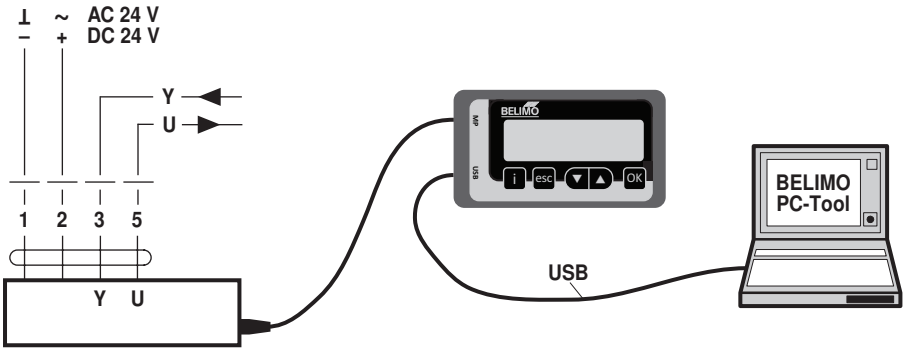
- The actuator can be parameterised by PC-Tool and ZTH EU via the service socket.

Service Tools connection

ZTH EU connection

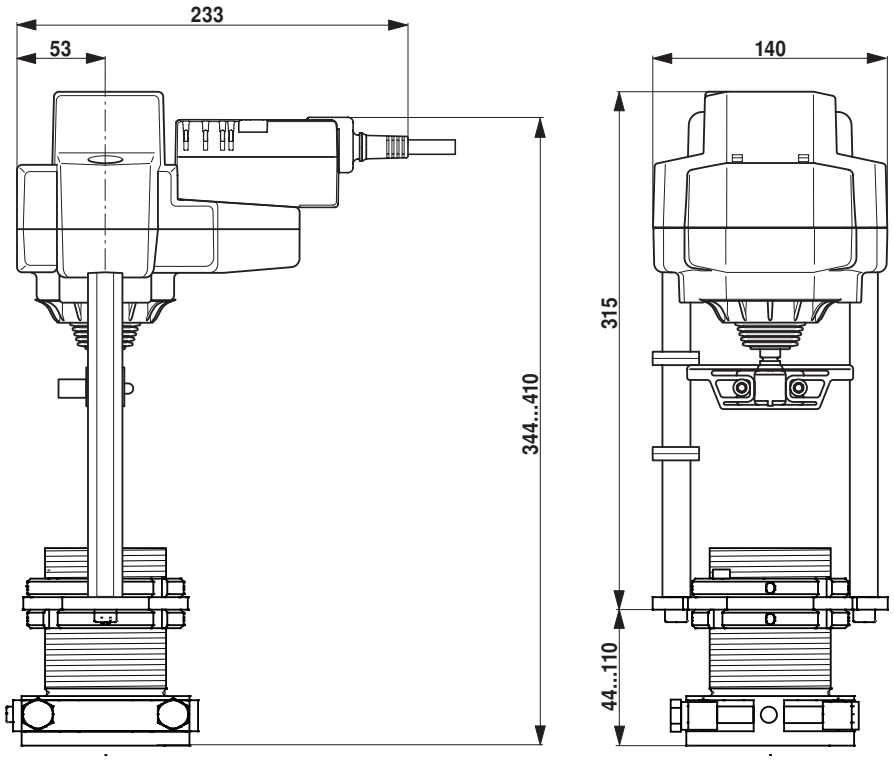


PC-Tool connection



Dimensions [mm]

Dimensional drawings



Further documentation

- Installation instructions for actuators